

WHAT IS CLAIMED IS:

1. A system for radially positioning a workpiece for electrochemical machining, the system comprising:
  - a pressurized air chamber configured to contain pressurized air; and
  - an expandable diaphragm configured to position the workpiece radially relative to an electrode assembly in response to the pressurized air being released into the pressurized air chamber.
2. The system of claim 1, further comprising a workpiece surface configured to receive the workpiece when the workpiece is loaded into the system such that the workpiece sits upon the workpiece surface.
3. The system of claim 2, further comprising a clamping ring configured to clamp the workpiece against the workpiece surface.
4. The system of claim 3, wherein the workpiece surface includes an anode contact to which the workpiece is electrically coupled when clamped against the workpiece surface.
5. The system of claim 1, further comprising a pressurized air port coupled to the pressurized air chamber, the pressurized air being released into the pressurized air chamber through the pressurized air port.

6. The system of claim 1, wherein the expandable diaphragm includes a thin wall configured to deflect in response to the pressurized air being released into the pressurized air chamber, the deflection causing the workpiece to position radially relative to the electrode assembly.
7. The system of claim 6, wherein the deflection is approximately 75 microns.
8. The system of claim 6, wherein the thin wall has a thickness of approximately 150 microns.
9. The system of claim 8, wherein the thickness of the thin wall does not vary by more than approximately 5-10 microns in any one place.
10. The system of claim 1, wherein the expandable diaphragm radially positions the workpiece with an accuracy of approximately 2 microns.

11. A method for radially positioning a workpiece for electrochemical machining, the method comprising:

deflecting a thin wall of an expandable diaphragm, the deflection causing the workpiece to position radially relative to an electrode assembly.

12. The method of claim 11, further comprising the step of releasing pressurized air into a pressurized air chamber, the pressurized air causing the thin wall to deflect.

13. The method of claim 11, further comprising the step of placing the workpiece within a locating area such that the workpiece sits upon a workpiece surface.

14. The method of claim 13, further comprising the step of clamping the workpiece against the workpiece surface.

15. The method of claim 14, wherein the workpiece surface includes an anode contact to which the workpiece is electrically coupled when clamped against the workpiece surface.

16. A system for radially positioning a workpiece for electrochemical machining, the system comprising:

means for deflecting a thin wall of an expandable diaphragm, the deflection causing the workpiece to position radially relative to an electrode assembly.

17. The system of claim 16, further comprising means for releasing the pressurized air into the pressurized air chamber.

18. The system of claim 16, further comprising means for placing the workpiece within a locating area such that the workpiece sits upon a workpiece surface.

19. The system of claim 18, further comprising means for clamping the workpiece against the workpiece surface.

20. The system of claim 19, wherein the workpiece surface includes an anode contact to which the workpiece is electrically coupled when clamped against the workpiece surface.